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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,681	01/30/2004	William Kit Dean	066543.0114	8537
23640	7590	06/08/2006	EXAMINER	
BAKER BOTTS, LLP			LE, TOAN M	
910 LOUISIANA			ART UNIT	
HOUSTON, TX 77002-4995			PAPER NUMBER	
			2863	

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/769,681	Applicant(s) DEAN, WILLIAM KIT	
	Examiner Toan M. Le	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Applicant's election without traverse of Group I, Claims 1-15 in the reply filed on 5/24/06 is acknowledged.

Specification

The disclosure is objected to because of the following informalities:

Specification, page 37, line 16, "44" should read -42-; page 45, line 12, "85 and 87" should read -65 and 67-; page 46, line 3, "99" should read -990-; page 49, line 16, "calculatio" should read -calculation-.

Appropriate correction is required.

Claim Objections

Claims 4-8 are objected to because of the following informalities:

Claims 4-8, line 1, "the feature vector", there is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Gao (US Patent No. 6,226,596).

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Referring to claim 1, Gao discloses an apparatus for calculating and displaying 3D seismic classification features comprising:

designation means for designating a path in a 3D volume;

reference means for selecting a reference starting and ending position (col. 6, lines 27-44; Blocks 402 and 404 on figure 4);

a geo-operator calculated from the voxel data of said 3D volume, said geo-operator capable of having variable crossline, inline and vertical extent and having (col. 6, lines 45-66 to col. 7, lines 1-38; Blocks 406 and 408 on figure 4)

an orientation direction such that it can be maintained tangent to said path, as it traverses from the start point to the endpoint of said path (col. 7, lines 39-48 ; Block 410 on figure 4);

association means for associating horizontal (2D), vertical (2D) and arbitrary (3D) feature vectors with the geo-operator output (col. 7, lines 49-50; Block 412 on figure 4; col. 8, lines 39-46); and

determination means for determining where the geo-operator has sufficient data for the calculation to form a valid output;

wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path (col. 7, lines 64-66 to col. 8, lines 1-16; Blocks 418 and 420 on figure 4).

As to claim 2, Gao discloses a process for a device for calculating and displaying 3D seismic classification features relying on a means of designating a path in a 3D volume comprising:

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employing a geo-operator calculated from the voxel data of said 3D volume, said geo-operator capable of having variable crossline, inline and vertical extent and having a an orientation direction such that it can be maintained tangent to said path, as it traverses from the start point to the endpoint of said path (col. 6, lines 45-66 to col. 7, lines 1-38);

using an association means of associating horizontal (2D), vertical (2D) and arbitrary (3D) feature vectors with the output of said geo-operator (col. 7, lines 49-50; Block 412 on figure 4; col. 8, lines 39-46); and

with a determination means of determining where the geo-operator has sufficient data for the calculation to form a valid output;

wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path (col. 7, lines 64-66 to col. 8, lines 1-16).

Referring to claim 3, Gao discloses an apparatus for calculating and displaying 3D seismic classification features comprising:

a path in a 3D volume, the path having a reference start position and a reference end position (col. 6, lines 27-44); and

a geo-operator capable of generating an output (col. 6, lines 45-66 to col. 7, lines 1-38), the geo-operator comprising:

an evaluation component that determines where the geo-operator has sufficient data to generate the output;

wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path (col. 7, lines 64-66 to col. 8, lines 1-16).

As to claims 4-8, Gao discloses an apparatus for calculating and displaying 3D seismic classification features, wherein the feature vector is horizontal/vertical/arbitrary/two dimensional/three dimensional (col. 8, lines 39-46).

Referring to claims 9-12, Gao discloses an apparatus for calculating and displaying 3D seismic classification features, wherein the geo-operator is calculated from voxel data of the 3D volume, wherein the geo-operator has a variable crossline/variable inline/vertical extent (col. 7, lines 1-38)

As to claim 13, Gao discloses an apparatus for calculating and displaying 3D seismic classification features, wherein the geo-operator further comprises: an orientation direction constructed and arranged to be maintained tangent to the path from the start position to the end position (col. 7, lines 39-48).

Referring to claim 14, Gao discloses an apparatus for calculating and displaying 3D seismic classification features, wherein the geo-operator further comprises: one or more feature vectors that are associated with the output of the geo-operator (col. 6, lines 53-61).

As to claim 15, Gao discloses a method for calculating and displaying 3D seismic classification features along a path having a startpoint and an endpoint, comprising:

employing a geo-operator that is calculated from voxel data of the 3D volume, the geo-operator capable of having variable crossline, inline and vertical extent and having an orientation direction that is maintained tangent to the path as the path is traversed from the

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startpoint to the endpoint, the geo-operator generating output along the path (col. 6, lines 45-66 to col. 7, lines 1-38);

determining where the geo-operator has sufficient data to generate the output;
generating output with the geo-operator (col. 6, lines 45-66 to col. 7, lines 1-38); and
associating horizontal, vertical and arbitrary feature vectors with the output of the geo-operator (col. 7, lines 49-50; col. 8, lines 39-46);

wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path (col. 7, lines 64-66 to col. 8, lines 1-16).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Fundamentals of 3-D Seismic Volume Visualization", Kidd et al., June 1999, The Leading Edge, Pages 702-710.

"Reducing Exploration and Production Risk by Visualization and Seismic Classification: A Case Study from the North Sea", Luchford et al., 2002 Eagle, Pages 677-685.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M. Le whose telephone number is (571) 272-2276. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Toan Le

May 31, 2006

BRYAN BUI
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read 'Bryan Bui', is written below the printed name and title.